

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No. : 10/527,454 Confirmation No. : 2206  
First Named Inventor : Christopher Paul FELL  
Filed : March 11, 2005  
TC/A.U. :  
Examiner :  
  
Docket No. : 038665.55999US  
Customer No. : 23911  
  
Title : Method For Reducing Bias Error In a Vibrating  
Structure Gyroscope

**RESPONSE TO NOTICE OF INSUFFICIENT BASIC NATIONAL FEE  
REQUIRED AND/OR MISSING COPY OF INTERNATIONAL  
APPLICATION UNDER 35 U.S.C. § 371 AND 37 C.F.R. § 1.495**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

May 12, 2006

Sir:

Applicants are in receipt of the attached Notice of Insufficient Basic National Fee Required, etc., which indicates that a copy of the International Application, which includes a copy of the Request Form, submitted to the International Bureau is missing and that the basic national fee to enter national stage in the United States has not been paid. In response to this Notice, Applicants note the following:

1. The Basic National Fee, in the amount of \$1,040.00 was paid with the initial filing of this application on March 11, 2005, as evidenced by the enclosed postcard receipt. Moreover, the transmittal form PTO-1390 which accompanied the filing also indicated that a check in the amount of \$1,040.00 was enclosed to cover the fees calculated on page 2 of the form. In addition, Item c on page 2 of the form was also checked, authorizing the Commissioner to

U.S. Appln. Serial No. 10/527,454  
Response Dated: May 12, 2006  
Reply to Office Action Mailed January 23, 2006  
Attorney Docket No. 038665.55999US

charge any additional fees which may be required or credit any overpayment to counsel's deposit account. Accordingly, Applicant respectfully submits that all fees required in connection with this application have been duly and properly paid.

2. A copy of the International Application as filed, was duly and properly transmitted to the U.S. Patent and Trademark office by the International Bureau, as evidenced by the attached form PCT/IB/308.

3. Copies of all relevant papers regarding this application were duly and properly filed by Applicant on March 11, 2005, as evidenced by the attached postcard receipt.

4. In all events, in order to facilitate the further processing of this application by the U.S. Patent and Trademark Office, a copy of the International Application as filed, together with the PCT Request are submitted herewith.

Accordingly, Applicants respectfully submit that all required papers have been submitted in connection with this application, and that all required fees have been paid. If any further action on the part of Applicant is required in order to complete the processing of this application by the U.S. Patent and Trademark Office, notification to the undersigned would be appreciated.

If there are any questions regarding this response or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

U.S. Appln. Serial No. 10/527,454  
Response Dated: May 12, 2006  
Reply to Office Action Mailed January 23, 2006  
Attorney Docket No. 038665.55999US

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket # 038665.55999US).

Respectfully submitted,



Gary R. Edwards  
Registration No. 31,824

CROWELL & MORING LLP  
Intellectual Property Group  
P.O. Box 14300  
Washington, DC 20044-4300  
Telephone No.: (202) 624-2500  
Facsimile No.: (202) 628-8844  
GRE:kms  
Attachments  
*2717437v1*



GNE / GNE

55999US

## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
 United States Patent and Trademark Office  
 Address: COMMISSIONER FOR PATENTS  
 P.O. Box 1430  
 Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

U.S. APPLICATION NUMBER NO.	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
10/527,454	Christoper Paul Fell	038665.55999US
INTERNATIONAL APPLICATION NO.		
PCT/GB05/50010		
I.A. FILING DATE	PRIORITY DATE	
	02/01/2005	

23911  
 CROWELL & MORING LLP  
 INTELLECTUAL PROPERTY GROUP  
 P.O. BOX 14300  
 WASHINGTON, DC 20044-4300

CONFIRMATION NO. 2206  
 371 FORMALITIES LETTER



\*OC000000017886371\*

Date Mailed: 01/23/2006

NOTICE OF INSUFFICIENT BASIC NATIONAL FEE REQUIRED AND/OR MISSING COPY  
 OF INTERNATIONAL APPLICATION UNDER 35 U.S.C 371 AND 37 CFR 1.495

Indication of Small Entity Status has not been received.

The following items must be furnished:

Copy of International Application, which includes a copy of the Request Form, submitted to the International Bureau is missing. A copy of the International Application must be provided prior to 30 months from the priority date to avoid abandonment. Extensions of time under the provisions of 37 CFR 1.136 are not available for compliance with the requirements of 37 CFR 1.495(b). The international application may not be submitted via facsimile transmission.

*paid*

The basic national fee to enter the national stage in the United States of America under 35 U.S.C. 371 must be paid by 30 months from the priority date (37 CFR 1.495(b)(2)).

If the proper basic national fee is not paid within 30 months from the priority date, the international application will become ABANDONED as to the United States of America, and will not be accepted for national examination.

The amount required shown above reflects the correct fee as of the date of this Notice. If the amount changes prior to payment, applicant must pay the revised amount.

The current basic national fees are listed at 37 CFR 1.492(a). In addition, current PCT related fees are listed in each weekly issue of the Official Gazette of the United States Patent and Trademark Office and the amount of the fees can be obtained from the USPTO's web site [www.uspto.gov](http://www.uspto.gov) or by contacting the Public Service Center at (703) 308-4357.

Extensions of time under the provisions of 37 CFR 1.136 are not available for compliance with the requirements of 37 CFR 1.495(b)(2).

For filing the basic national fee, the first class certificate of mailing procedure of 37 CFR 1.8 is NOT available to establish the date of mailing as the date of receipt in the USPTO (see 37 CFR 1.8(a)(2)(i)(F)). The Express Mail procedure of 37 CFR 1.10 may be used.

The basic national fee may not be submitted via facsimile transmission.

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

*A copy of this notice **MUST** be returned with the response.*

DARRELL C COTTMAN

Telephone: (703) 308-9140 EXT 203

**PART 1 - ATTORNEY/APPLICANT COPY**

U.S. APPLICATION NUMBER NO.	INTERNATIONAL APPLICATION NO.	ATTY. DOCKET NO.
10/527,454	PCT/GB05/50010	038665.55999US

FORM PCT/DO/EO/912 (371 Formalities Notice)

Crowell & Moring LLP

10/527 454

Today's Date: March 11, 2005

FILED WITH FEES UNDER 35 U.S.C. § 371

Attorney Docket: 038665.55999US  
First Named Inventor: Christopher Paul FELL  
Serial No.:  
Filing Date: March 11, 2005

The following has been received in the U.S. Patent & Trademark Office on the date stamped hereon:

Transmittal Letter to the United States PTO/US (35 USC § 371) (in duplicate) with Check No 280671 in the amount of \$1,040.00 (PCT Fee and Assignment Recording Fee)  
 Application Data Sheet  
 Copy of International Application, including 10 Claims and Abstract (pages 1-18)  
 Nine (9) Sheets of drawings showing Figures 1a-9  
 Executed Declaration and Power of Attorney  
 Preliminary Amendment  
 Information Disclosure Statement, EP and GB Search Reports, PTO-1449 w/ 1 non-US reference  
 Executed Assignment with cover sheet (PTO1596)

GRE/kms

DUE DATE: April 2, 2005  
(Deadline 10/4/2005)

365348vt

PTO-8 Rad PCT/PTO 1, MAR 2005

13

BEST AVAILABLE COPY

CROWELL & MORING LLP				Check No.:
VENDOR:	04815	Commissioner	Tents and Trademarks - DC 20231	280671
REF #	INV. #	INV. DATE	INV. DESCRIPTION	AMT. PAID
179028	30905-6:24	03/09/05	038665.55999US KS	1,040.00

Crowell & Moring LLP

Today's Date: March 11, 2005

FILED WITH FEES UNDER 35 U.S.C. § 371

Attorney Docket: 038665.55999US

First Named Inventor: Christopher Paul FELL

Serial No.:

Filing Date: March 11, 2005

The following has been received in the U.S. Patent & Trademark Office on the date stamped hereon:

- Transmittal Letter to the United States DO/EO/US (35 USC § 371) (in duplicate) with Check No. 280671 in the amount of \$1,040.00 (PCT Fee and Assignment Recording Fee).
- Application Data Sheet
- Copy of International Application, including 10 Claims and Abstract (pages 1-18)
- Nine (9) Sheets of drawings showing Figures 1a-9
- Executed Declaration and Power of Attorney
- Preliminary Amendment
- Information Disclosure Statement, EP and GB Search Reports, PTO-1449 w/ 1 non-US reference
- Executed Assignment with cover sheet (PTO1595)

GRE-kms

DUE DATE: April 2, 2005

(Deadline 10/4/2005)

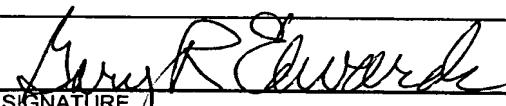
365346v1

**BEST AVAILABLE COPY**

<b>TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A SUBMISSION UNDER 35 U.S.C. 371</b>		ATTORNEY'S DOCKET NUMBER <b>038665.55999US</b> U.S. APPLICATION NO. (If known, see 37 CFR 1.5)
INTERNATIONAL APPLICATION NO. <b>PCT/GB2005/050010</b>	INTERNATIONAL FILING DATE <b>1 February 2005 (01.02.2005)</b>	PRIORITY DATE CLAIMED <b>04 February 2004 (04.02.2004)</b>
TITLE OF INVENTION <b>METHOD FOR REDUCING BIAS ERROR IN A VIBRATING STRUCTURE GYROSCOPE</b>		
APPLICANT(S) FOR DO/EO/US <b>Christopher Paul FELL and Andrew KAZER</b>		
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:		
<ol style="list-style-type: none"> <li>1. <input checked="" type="checkbox"/> This is a <b>FIRST</b> submission of items concerning a submission under 35 U.S.C. 371.</li> <li>2. <input type="checkbox"/> This is a <b>SECOND</b> or <b>SUBSEQUENT</b> submission of items concerning a submission under 35 U.S.C. 371.</li> <li>3. <input checked="" type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.</li> <li>4. <input checked="" type="checkbox"/> The US has been elected (Article 31).</li> <li>5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2))             <ol style="list-style-type: none"> <li>a. <input checked="" type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau).</li> <li>b. <input type="checkbox"/> has been communicated by the International Bureau.</li> <li>c. <input type="checkbox"/> Is not required, as the application was filed in the United States Receiving Office (RO/US).</li> </ol> </li> <li>6. <input type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(2))             <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> is attached hereto.</li> <li>b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4).</li> </ol> </li> <li>7. <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))             <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau).</li> <li>b. <input type="checkbox"/> have been communicated by the International Bureau.</li> <li>c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired.</li> <li>d. <input type="checkbox"/> have not been made and will not be made.</li> </ol> </li> <li>8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).</li> <li>9. <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).</li> <li>10. <input type="checkbox"/> An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).</li> </ol>		
Items 11 to 20 below concern document(s) or information included:		
<ol style="list-style-type: none"> <li>11. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98.</li> <li>12. <input checked="" type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.</li> <li>13. <input checked="" type="checkbox"/> A preliminary amendment.</li> <li>14. <input checked="" type="checkbox"/> An Application Data Sheet under 37 CFR 1.76.</li> <li>15. <input type="checkbox"/> A substitute specification.</li> <li>16. <input type="checkbox"/> A power of attorney and/or change of address letter.</li> <li>17. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 37 CFR 1.821- 1.825.</li> <li>18. <input type="checkbox"/> A second copy of the published International Application under 35 U.S.C. 154(d)(4).</li> <li>19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).</li> <li>20. <input checked="" type="checkbox"/> Other items or information: Nine (9) sheets of drawings showing Figures 1a.-9; EPO and British Search Reports</li> </ol>		

This collection of information is required by 37 CFR 1.414 and 1.491-1.492. The information is required to obtain or retain a benefit by the public, which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 15 minutes to complete, including gathering information, preparing, and submitting the completed form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office; U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

U.S. APPLICATION NO. (if known, see 37 CFR 1.5)		INTERNATIONAL APPLICATION NO. <b>PCT/GB2005/050010</b>		ATTORNEY'S DOCKET NUMBER <b>038665.55999US</b>	
The following fees have been submitted				CALCULATIONS PTO USE ONLY	
21. <input checked="" type="checkbox"/> Basic national fee .....\$300.00				\$300.00	
22. <input checked="" type="checkbox"/> Examination fee If International preliminary examination report prepared by USPTO and all claims satisfy provisions of PCT Article 33(1)-(4) .....\$100.00 All other situations.....\$200.00				\$200.00	
23. <input checked="" type="checkbox"/> Search fee Search fee (37 CFR 1.44(a)(2)) has been paid on the international application to the USPTO as an International Searching Authority .....\$100 International Search Report prepared and provided to the Office .....\$400 All other situations.....\$500				\$500.00	
<b>TOTAL OF 21, 22 AND 23 =</b>				<b>\$1,000.00</b>	
<input type="checkbox"/> Additional fee for specification and drawings filed in paper over 100 sheets (excluding sequence listing or computer program listing filed in an electronic medium). The fee is \$250 for each additional 50 sheets of paper or fraction thereof.					
Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof (round up to a whole number)		RATE	
27 - 100	/ 50 =			x 250	
Surcharge of \$130.00 for furnishing the oath or declaration later than 30 months from the earliest claimed priority date (37 CFR 1.492(h)).				\$	
CLAIMS		NUMBER FILED	NUMBER EXTRA	RATE	
Total claims		10 - 20		x 50	\$
Independent claims		01 - 3		x 200	\$
MULTIPLE DEPENDENT CLAIM(S) (if applicable)				+ 360	
<b>TOTAL OF ABOVE CALCULATIONS =</b>				<b>\$1,000.00</b>	
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. Fees above are reduced by 1/2.					
				<b>SUBTOTAL =</b> <b>\$1,000.00</b>	
Processing fee of \$130.00 for furnishing the English translation later than 30 months from the earliest claimed priority date (37 CFR 1.492(i)). .....+				\$	
				<b>TOTAL NATIONAL FEE =</b> <b>\$1,000.00</b>	
Fee for recording the enclosed assignment (37 CFR 1.21 (h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property .....+				\$40.00	
				<b>TOTAL FEES ENCLOSED =</b> <b>\$1,040.00</b>	
				Amount to be refunded: \$	
				Amount to be charged: \$	
<p>a. <input checked="" type="checkbox"/> A check in the amount of \$1,040.00 to cover the above fees is enclosed.</p> <p>b. <input type="checkbox"/> Please charge my Deposit Account No. 05-1323 (Attorney Docket No. ) in the amount of \$ to cover the above fees. A duplicate copy of this sheet is enclosed.</p> <p>c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 05-1323 (Attorney Docket No. 038665.55999US). A duplicate copy of this sheet is enclosed.</p> <p>d. <input type="checkbox"/> Fees are to be charged to a credit card. <b>WARNING:</b> Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.</p>					
<p><b>NOTE: Where an appropriate time limit under 37 CFR 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the International Application to pending status.</b></p>					
<p>SEND ALL CORRESPONDENCE TO: Crowell &amp; Moring, LLP Intellectual Property Group P.O. Box 14300 Washington, D.C. 20044-4300 Tel. No. (202) 624-2500 Fax No. (202) 628-8844</p>					
<p>  <b>SIGNATURE</b>  <b>Gary R. Edwards</b>  <b>NAME</b>  <b>31,824</b>  <b>REGISTRATION NUMBER</b>  <b>March 11, 2005</b>  <b>DATE</b> </p>					

## APPLICATION DATA SHEET

### APPLICATION INFORMATION

Application Number::

Filing Date:: 03/11/05

Application type:: Regular

Subject Matter:: Utility

Title:: Method For Reducing Bias Error In a  
Vibrating Structure Gyroscope

Attorney Docket No.: 038665.55999US

Suggested Drawing Figure:: 1

Total Drawing Sheets:: 9

Small Entity?:: No

## APPLICANT INFORMATION

Applicant one Authority Type::	Inventor
Primary Citizenship Country::	Great Britain
Status::	Full Capacity
Given name::	Christiopher
Middle name::	Paul
Family name::	FELL
City of Residence::	Plymouth, Devon
Country of Residence::	Great Britain
Street of mailing address::	c/o BAE SYSTEMS Avionics Limited Clittaford Road, Southway
City of mailing address::	Plymouth, Devon
Country of mailing address::	United Kingdom
Postal or Zip Code of mailing address::	PL6 6DE

Applicant two Authority Type::	Inventor
Primary Citizenship Country::	Great Britain
Status::	Full Capacity
Given name::	Andrew
Family name::	KAZER
City of Residence::	Taunton, Somerset
Country of Residence::	Great Britain
Street of mailing address::	c/o BAE SYSTEMS Avionics Limited Clittaford Road, Southway
City of mailing address::	Plymouth, Devon
Country of mailing address::	United Kingdom
Postal or Zip Code of mailing address::	PL6 6DE

**CORRESPONDENCE INFORMATION**

Correspondence customer number:: 23911

**REPRESENTATIVE INFORMATION**

Representative customer number:: 23911

**DOMESTIC PRIORITY INFORMATION**

Application::	Continuity Type::	Parent Application::	Parent Filing Date::
This application	National Stage of	PCT/GB2005/050010	02/01/2005

**FOREIGN PRIORITY INFORMATION**

Country::	Application Number::	Filing Date::	Priority Claimed::
Great Britain	0402408.9	02/04/2004	YES
EP	04250595.8	04/04/2004	YES

**ASSIGNEE INFORMATION**

Assignee Name:: BAE SYSTEMS plc

Street of mailing address:: 6 Carlton Gardens

City of mailing address:: London

Country of Mailing Address:: United Kingdom

Postal or Zip Code of mailing address:: SW1Y 5AD

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	Confirmation No. :
First Named Inventor	:	Christopher Paul FELL
Filed	:	March 11, 2005
TC/A.U.	:	
Examiner	:	
Docket No.	:	038665.55999US
Customer No.	:	23911
Title	:	Method For Reducing Bias Error In a Vibrating Structure Gyroscope

**PRELIMINARY AMENDMENT**

Mail Stop PCT  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

March 11, 2005

Sir:

Please enter the following amendments to the claims prior to the examination of the application.

**Amendments to the Claims** are reflected in the listing of claims which begins on page 2 of this paper.

**Remarks** begin on page 5 of this paper.

**Amendments to the Claims:**

The listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Original) A method for reducing bias error in a Vibrating Structure Gyroscope having a vibrating structure, primary drive means for putting the vibrating structure into carrier mode resonance, primary pick-off means for sensing carrier mode motion, secondary pick-off means for sensing response mode vibration of the vibrating structure in response to applied rotation rate, secondary drive means for applying a force to control the response mode motion, closed loop primary control loops for maintaining a fixed amplitude of motion at the primary pick-off means and for maintaining the drive frequency at the resonance maximum, and secondary control loops and for maintaining a null at the secondary pick-off means, in which the ratio  $SF_{QUAD}$  divided by  $SF_{IN-PHASE}$  is measured from the secondary control loop to provide a direct measurement of  $\text{Sin}(\phi_{SD} + \phi_{PPO})$ , according to the relationship;

$$SF_{QUAD} = SF_{IN-PHASE} \times \text{Sin}(\phi_{SD} + \phi_{PPO})$$

where  $SF_{QUAD}$  is the quadrature scalefactor,  $SF_{IN-PHASE}$  is the in-phase scalefactor,  $\phi_{SD}$  is the phase error in the secondary drive means and  $\phi_{PPO}$  is the phase error in the primary pick-off means, the total phase error  $\phi_E$  is obtained directly from the measured  $\text{Sin}(\phi_{SD} + \phi_{PPO})$  according to the relationship;

$$\phi_E = \phi_{SD} + \phi_{PPO}$$

and phase corrections applied to the secondary drive means and/or primary pick-off means to reduce the phase error  $\phi_E$  and hence the quadrature bias error to enhance the performance of the gyroscope.

2. (Original) A method according to Claim 1, when used with a gyroscope having a silicon vibrating structure.

3. (Original) A method according to Claim 2, when used with a gyroscope having a substantially planar, substantially ring shaped vibrating structure.

4. (Currently Amended) A method according to ~~any one Claims 1 to 3~~ Claim 1, when used with a gyroscope having analogue primary and secondary control loops with variable value capacitors, in which the phase corrections are applied by varying the values of the variable value capacitors in the secondary control loop relating to the secondary drive means and/or the values of the variable value capacitors in the primary control loop relating to the primary pick-off means to adjust  $\phi_{SD}$  and/or  $\phi_{PPO}$  such that  $\phi_E$  is minimised in value.

5. (Currently Amended) A method according to ~~any one of Claims 1 to 3~~ Claim 1, when used with a gyroscope having digital primary and secondary control loops, in which the phase corrections equal to  $\phi_E$  are applied to the secondary drive means via the secondary control loop in a manner such as to cross-couple in-phase and quadrature drive channels by an amount equal and opposite to the combined effect of the phase errors in the vibrating structure control system.

6. (Currently Amended) A method according to ~~any one of Claims 1 to 3~~ Claim 1, when used with a gyroscope having digital primary and secondary control loops, in which the phase corrections equal to  $\phi_E$  are applied to the primary pick-off

means by the primary control loop in a manner such as to cross-couple in-phase and quadrature drive channels by an amount equal and opposite to the combined effect of the phase errors in the vibrating structure control system.

7. (Currently Amended) A method according to Claim 4 or ~~Claim 5~~, in which in-phase and quadrature signal components are each multiplied by  $\text{Sin } \phi_{\text{CORR}}$  and  $\text{Cos} \phi_{\text{CORR}}$ , where  $\phi_{\text{CORR}}$  is the phase correction, and the effective phase of each in-phase and quadrature channel adjusted according to the summations.

$$\text{Quadrature}_{\text{CORR}} = \text{Quadrature} \times \text{Cos} \phi_{\text{CORR}} + \text{In-phase} \times \text{Sin} \phi_{\text{CORR}}$$

and

$$\text{In-phase}_{\text{CORR}} = \text{In-phase} \times \text{Cos} \phi_{\text{CORR}} - \text{Quadrature} \times \text{Sin} \phi_{\text{CORR}}.$$

8. (Original) A method according to Claim 6, in which  $\phi_{\text{CORR}}$  is adjusted in accordance with operating temperature of the gyroscope to maintain  $\phi_E$  at a minimised value.

9. (Cancelled)

10. A Vibrating Structure Gyroscope operated according to the method of ~~any one of claims 1 to 8~~ Claim 1.

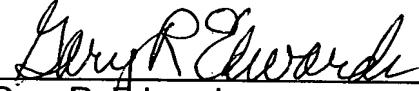
**REMARKS**

Entry of the amendments to the claims before examination of the application is respectfully requested. These claims have been amended to remove multiple dependencies.

If there are any questions regarding this Preliminary Amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket # 038665.55999US).

Respectfully submitted,

  
\_\_\_\_\_  
Gary R. Edwards  
Registration No. 31,824

CROWELL & MORING LLP  
Intellectual Property Group  
P.O. Box 14300  
Washington, DC 20044-4300  
Telephone No.: (202) 624-2500  
Facsimile No.: (202) 628-8844  
GRE:kms  
365357v1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	Confirmation No. :
First Named Inventor	:	Christiopher Paul FELL
Filed	:	March 11, 2005
TC/A.U.	:	
Examiner	:	
Docket No.	:	038665.55999US
Customer No.	:	23911
Title	:	Method For Reducing Bias Error In a Vibrating Structure Gyroscope

**INFORMATION DISCLOSURE STATEMENT**  
**UNDER 37 C.F.R. §§ 1.97 AND 1.98**

**Mail Stop PCT**  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**March 11, 2005**

Sir:

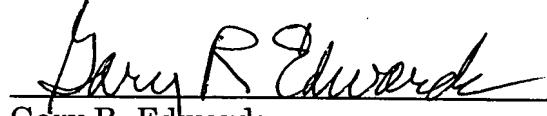
In accordance with the duty of disclosure under 37 C.F.R. § 1.56, Applicant hereby notifies the U.S. Patent and Trademark Office of the documents which are listed on the attached Form PTO-1449 and/or listed herein and which the Examiner may deem relevant to patentability of the claims of the above-identified application.

In compliance with the concise explanation requirement under 37 C.F.R. § 1.98(a)(3) for foreign language documents, Applicant encloses herewith a copy of a corresponding foreign Search Report citing such documents, together with an English-language version (if not already included) of that portion of the Search Report indicating the degree of relevance found by the foreign office.

The present Information Disclosure Statement is being filed (1) no later than three months from the application's filing date or (2) before the mailing date of the first Office Action on the merits (whichever is later), and therefore no certification under 37 C.F.R. § 1.97(e) or fee under 37 C.F.R. § 1.17(p) is required.

The submission of the listed documents is not intended as an admission that any such document constitutes prior art against the claims of the present application. Applicant does not waive any right to take any action that would be appropriate to antedate or otherwise remove any listed document as a competent reference against the claims of the present application.

Respectfully submitted,

  
\_\_\_\_\_  
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Substitute for form 1449A/PTO <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(use as many sheets as necessary)</i>				<b>Complete If Known</b>	
				Application Number	
				Filing Date	March 11, 2005
				First Named Inventor	Christopher Paul FELL
				Art Unit	
				Examiner Name	
Sheet	1	of	1	Attorney Docket Number	038665.55999US

## U.S. PATENT DOCUMENTS

## FOREIGN PATENT DOCUMENTS

Examiner Signature		Date Considered	
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**\*EXAMINER:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



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**Your Reference:** XA1871  
**Application No:** GB 0402408.9  
21 June 2004

**The Patent Office  
Patents Directorate**

Concept House  
Cardiff Road, Newport  
South Wales NP10 8QQ

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Dear Sir(s)

**Patents Act 1977: Search Report under Section 17(5)**

I enclose two copies of the search report and four copies of the citations.

**Publication**

I estimate that, provided you have met all the formal requirements, preparations for publication of your application will be completed soon after **28 June 2005**. At this time you will receive a letter confirming the exact date when the preparations for publication will be completed. This letter will also tell you the publication number and date of publication of your application.

**Withdrawal/amendment**

If you wish to withdraw your application before it is published you must do so before the preparations for publication are complete. **WARNING** - after preparations for publication are complete it will NOT be possible to withdraw your application from publication.

If you wish to file amended claims for inclusion with the published application you must do so before the preparations for publication are completed. If you write to the Office less than 3 weeks before 28 June 2005 please mark your letter prominently:

**“URGENT - PUBLICATION IMMINENT”.**

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†**Use of E-mail:** Please note that e-mail should be used for correspondence only.



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Application No: GB 0402408.9

Page 2

21 June 2004

Yours faithfully

Des Williams  
Contract Unit Manager



**Application No:** GB 0402408.9  
**Claims searched:** 1-10

**Examiner:** Stig Albjerg Andersen  
**Date of search:** 21 June 2004

## Patents Act 1977 : Search Report under Section 17

### Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance	
A	-	US 5400269 A	(WHITE et al.) see e.g. abstract; col.1, line 20-27; col.3, line 30-33; col.12, line 51-66; fig.22
A	-	US 2003/0056588 A1	(FELL et al.) see e.g. sec.[0027] and [0054]; claim 15
A	-	US 6003373 A	(MOORE et al.) see eg. abstract; col.2, line 39-col.3, line 12
A	-	GB 2327265 A	(FELL et al.) see whole document

### Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

### Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>W</sup>:

Worldwide search of patent documents classified in the following areas of the IPC<sup>7</sup>:

G01C, G01P

The following online and other databases have been used in the preparation of this search report:

EPODOC, WPI, JAPIO



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Datum/Date  
15.09.04

Zeichen/Ref./Réf. XA1871	Anmeldung Nr./Application No./Demande n°./Patent Nr./Patent No./Brevet n°. 04250595.8-2213-
Anmelder/Applicant/Demandeur/Patentinhaber/Proprietor/Titulaire BAE Systems PLC	

## COMMUNICATION

The European Patent Office herewith transmits as an enclosure the European search report for the above-mentioned European patent application.

If applicable, copies of the documents cited in the European search report are attached.

Additional set(s) of copies of the documents cited in the European search report is (are) enclosed as well.

The following specifications given by the applicant have been approved by the Search Division:

abstract  title

The abstract was modified by the Search Division and the definitive text is attached to this communication.

The following figure will be published together with the abstract: 4

## REFUND OF THE SEARCH FEE

If applicable under Article 10 Rules relating to fees, a separate communication from the Receiving Section on the refund of the search fee will be sent later.





DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	GB 2 327 265 A (BRITISH AEROSPACE) 20 January 1999 (1999-01-20) * page 12, paragraph 3 – page 15, paragraph 2; figures 2,3 *	1-10	G01C19/56
A	US 2003/033850 A1 (GUTIERREZ ROMAN C ET AL) 20 February 2003 (2003-02-20) * page 2, paragraph 0020 – page 4, paragraph 0069; figures 3,5 *	1-10	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			G01C G01P
The present search report has been drawn up for all claims			
1	Place of search Munich	Date of completion of the search 5 July 2004	Examiner Springer, O
CATEGORY OF CITED DOCUMENTS			
<p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			

**3.1 Dependent claim 9:**

The claims must not rely on the drawings. Claim 9 should be deleted (see Rule 29(6) EPC and the Guidelines for examination, C-III, 4.10)

**3.2 Independent claim 10:**

An independent claim should specify all of the essential features needed to define the invention and should include all the technical features of the invention which are essential for the technical effect. Independent claim 10 should therefore not only be directed to independent claim 1 but should include all essential features (see the Guidelines for examination, C-III, 4.4).

**4. Further Remarks**

The applicants are invited to file new claims which take account of the above comments, bearing in mind that all the features disclosed by the closest prior art **D1** in combination with the features mentioned in the preamble should be placed in the preamble of such a claim in accordance with Rule 29(1) EPC.

Reference signs in parentheses should be inserted in the claims to increase their intelligibility, Rule 29(7) EPC. This applies to both the preamble and characterising portion (see the Guidelines, C-III, 4.11).

The applicants should bring the description into conformity with the amended claims. Document **D1** should be identified in the description and the relevant background art disclosed therein should be briefly discussed (Rule 27(1)(b) EPC).

The applicants are asked to clearly identify the amendments carried out and to indicate the passages of the application as filed on which these amendments are based. These indications could be submitted in handwritten form on a copy of the relevant parts of the application as filed (see the Guidelines E-II, 1).